ORDER NO. AD8806154C4

Service Manual

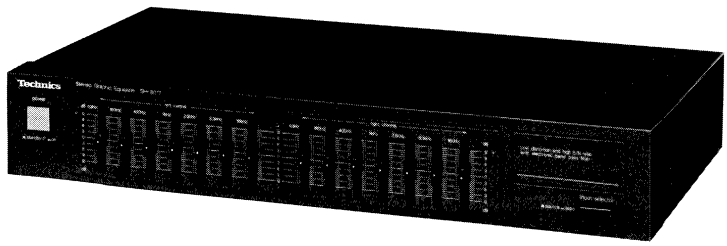
Equalizer

Stereo Graphic Equalizer

SH-8017

Color

(K) .....Black Type



Area

Color	Area
(K)	(PA) .....Far East PX.
(K)	(PE) .....European Military.

SPECIFICATIONS

(DIN 45 500)

Frequency response (center position)	5 Hz ~ 100 kHz, -3 dB
Maximum output voltage	6 V (1 kHz, THD 0.01%)
Rated output voltage	1 V
Rated total harmonic distortion	0.005% (20 Hz~ 20 kHz) 0.003% (1 kHz)
Input sensitivity	1 V
Signal-to-noise ratio	100 dB (110 dB, IHF'A)
Maximum input voltage	6 V (1 kHz)
Input impedance	33 kΩ
Gain	0±1 dB
Channel balance	250 Hz ~ 6300 Hz, ±0.5 dB
Channel separation	1 kHz, 70 dB
Band level controls	+ 12 dB ~ -12 dB (7 continuously variable elements per channel)
Center frequency	63 Hz, 160 Hz, 400 Hz, 1 kHz 2.5 kHz, 6.3 kHz, 16 kHz

GENERAL

Power supply	AC 50 Hz/ 60 Hz, 110 V ~ 127 V/220 V ~ 240V
Power consumption	7 W
Dimensions (W X H X D)	430 X 75 X 192.5 mm (16-15/16″ X 2-31/32″ X 7-19/32″)
Weight	1.8 kg (4.0 lb.)

Specifications are subject to change without notice for further improvement. Weight and dimensions are approximate.

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Technics

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■ LOCATION OF CONTROLS

• Power/equalization switch (power)

The power and the equalization effect can be switched on and standby.

on (▙▁▁▟):

Set to this position for equalizer correction.

standby ⏻ (▟▁▁▙):

Set to this position to turn off equalizer correction. By turning this switch on and standby, the equalizer effect can also be checked. When this switch is in the "standby ⏻" (▟▁▁▙) position, signals will still pass through the unit and be emitted, regardless of whether the power/equalization switch is in the "on" or "standby ⏻" position.

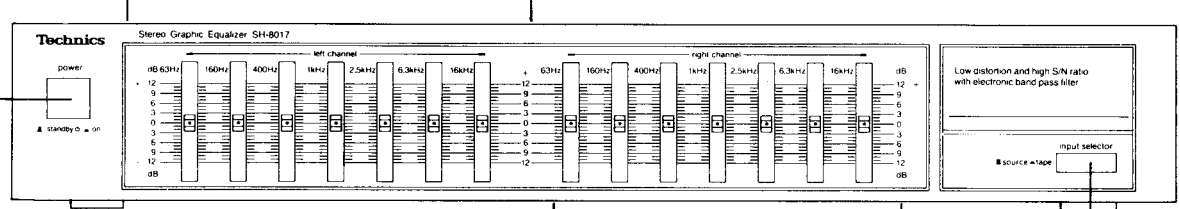
This switch turns on and to standby the secondary circuit power only. The unit is in the "standby ⏻" condition when this switch is set to the "standby ⏻" (▟▁▁▙) position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

• Left channel band-level controls (left channel)

These levers are used to adjust the 7 frequency levels that result from dividing the 63 Hz~16 kHz frequency range into 7.

When these levers are moved in the "+ dB" direction, peak frequency characteristics are obtained. When they are moved in the "– dB" direction, dip frequency characteristics are obtained. These characteristics can be emphasized or attenuated a maximum of 12 dB.

When the power/equalization switch is set to the "on" position, the tip of these levers will illuminate.



This unit (SH-8017)

• Right channel band-level controls (right channel)

These levers are same as left channel band-level controls.

• Input selector (input selector)

source (▟▁▁▙):

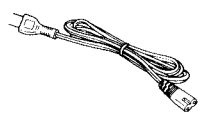
Set to this position to listen to the radio or a compact disc, etc. or when recording.

tape (▙▁▁▟):

Set to this position to listen to the audio tapedeck connected to this unit.

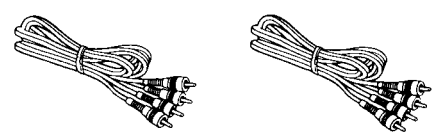
■ ACCESSORIES

- AC power supply cord 1



(SJA168-1)

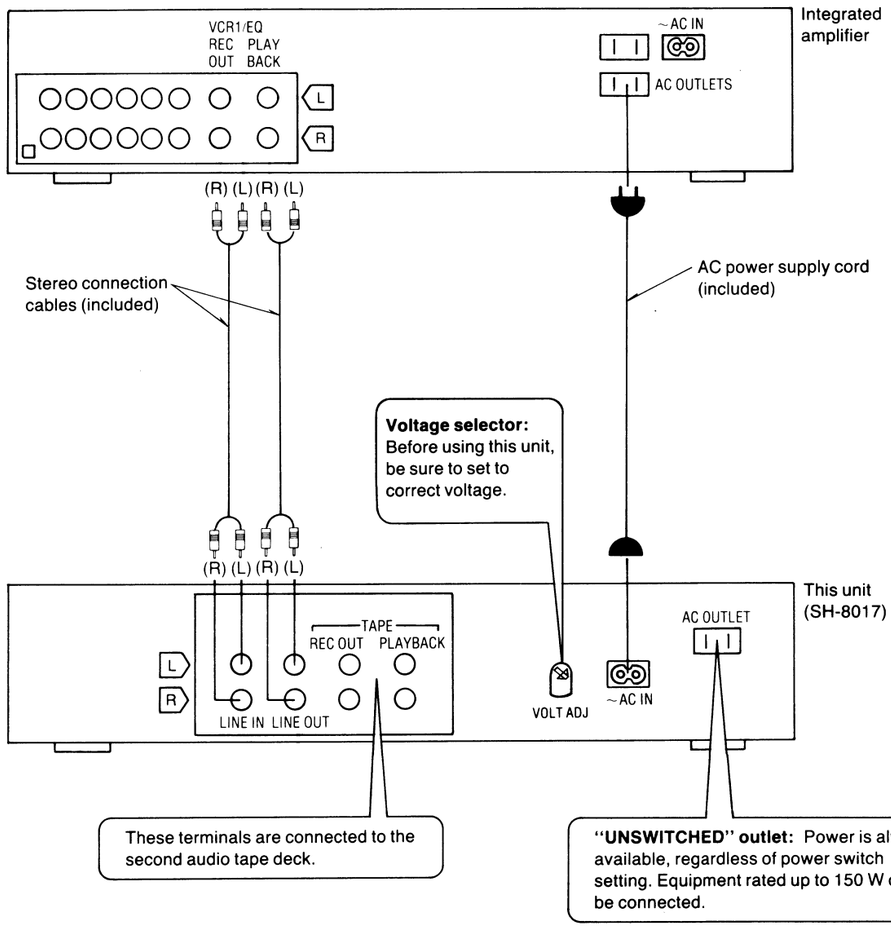
- Stereo connection cables 2



(SJPK2203-1)

■ CONNECTIONS

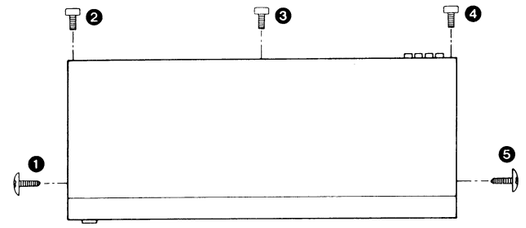
■ For connection to the amplifier of electronic components.


VCR1/EQ
REC OUT PLAY BACK
L
R
~AC IN
AC OUTLETS
Integrated amplifier
(R) (L) (R) (L)
Stereo connection cables (included)
AC power supply cord (included)
Voltage selector: Before using this unit, be sure to set to correct voltage.
(R) (L) (R) (L)
TAPE
REC OUT PLAYBACK
L
R
LINE IN LINE OUT
VOLT ADJ
~AC IN
AC OUTLET
This unit (SH-8017)
These terminals are connected to the second audio tape deck.
"UNSWITCHED" outlet: Power is always available, regardless of power switch setting. Equipment rated up to 150 W can be connected.

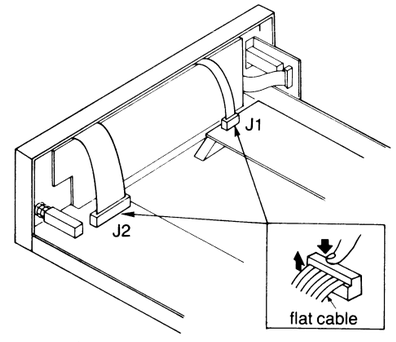
Notes:
- A receiver or preamplifier can be connected in the same manner as describes above. An integrated amplifier is used here for example.
- Note that the way the input and output cords are routed (for example, if they are tangled with the power cord) could cause a hum to be emitted.

■ DISASSEMBLY INSTRUCTIONS

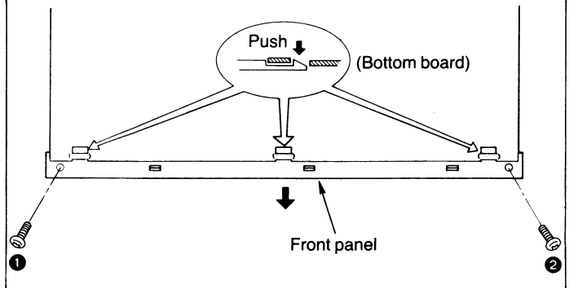
Ref. No. 1	How to remove the cabinet
Procedure 1	•Remove the 5 screws (❶~❺).



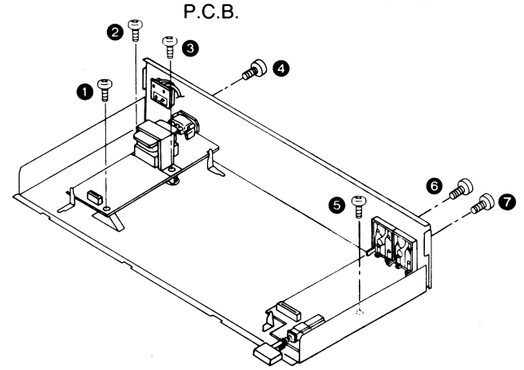
Ref. No. 2	How to remove the connector
Procedure 1→2	•Disconnect the lead ties of the 2 connectors (J1, J2).



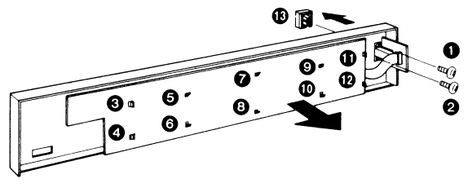
Ref. No. 3	How to remove the front panel
Procedure 1→3	1. Remove the 2 screws (❶~❷). 2. Push the 3 tabs projected from the bottom board in the direction of the arrow.



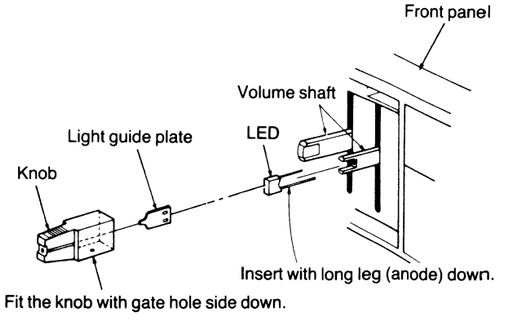
Ref. No. 4	How to remove the power supply P.C.B. and Jack P.C.B.
Procedure 1→3→4	1. Remove the 4 screws (❶~❹) of power supply P.C.B. 2. Remove the 3 screws (❺~❼) of Jack P.C.B.



Ref. No. 5	How to remove the switch P.C.B., and volume P.C.B.
Procedure 1→3→5	1. Remove the 2 screws (❶, ❷). 2. Push the 10 tabs aside (❸~⓬). 3. Remove the power switch button (⓭) in the direction of the arrow.

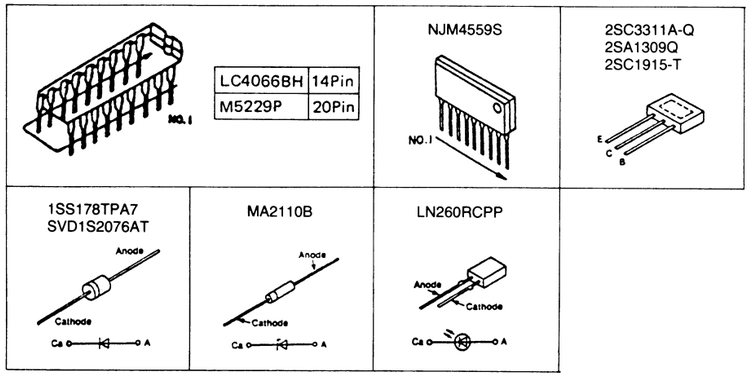


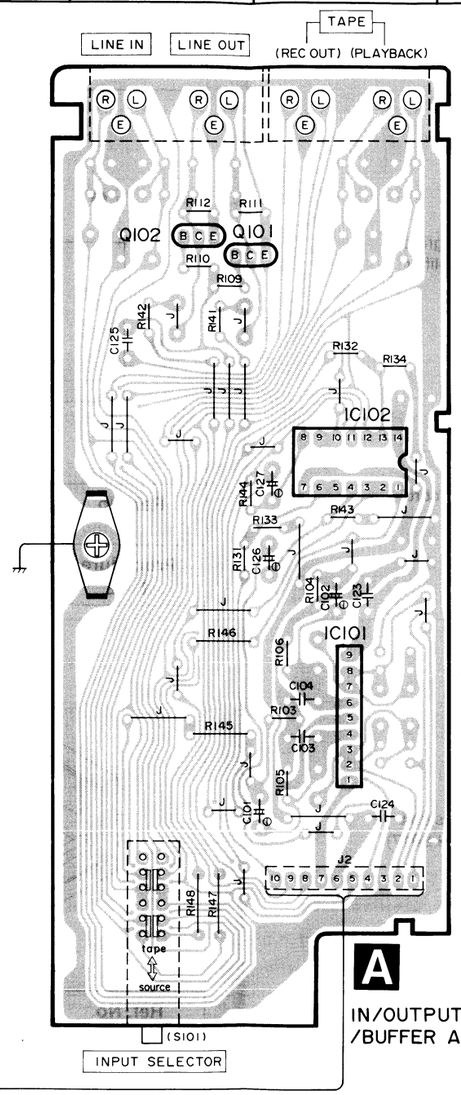
■ How to fit the volume rod



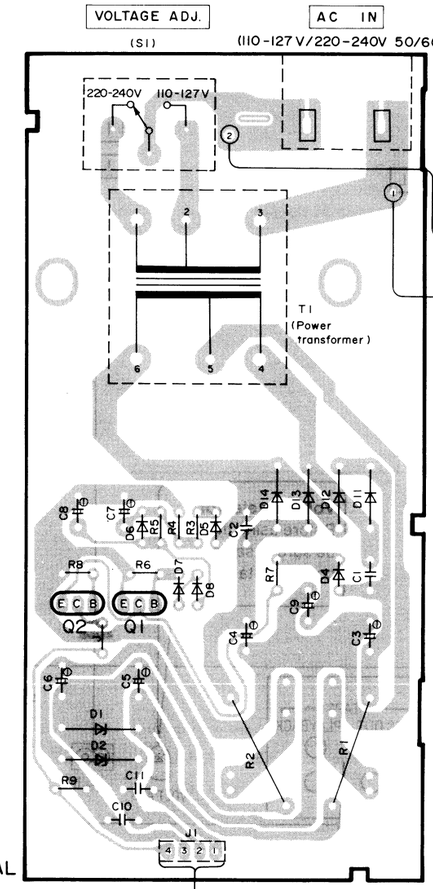
■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

•TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

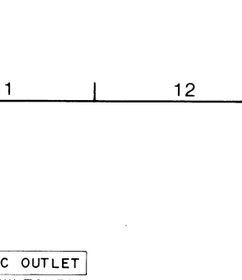




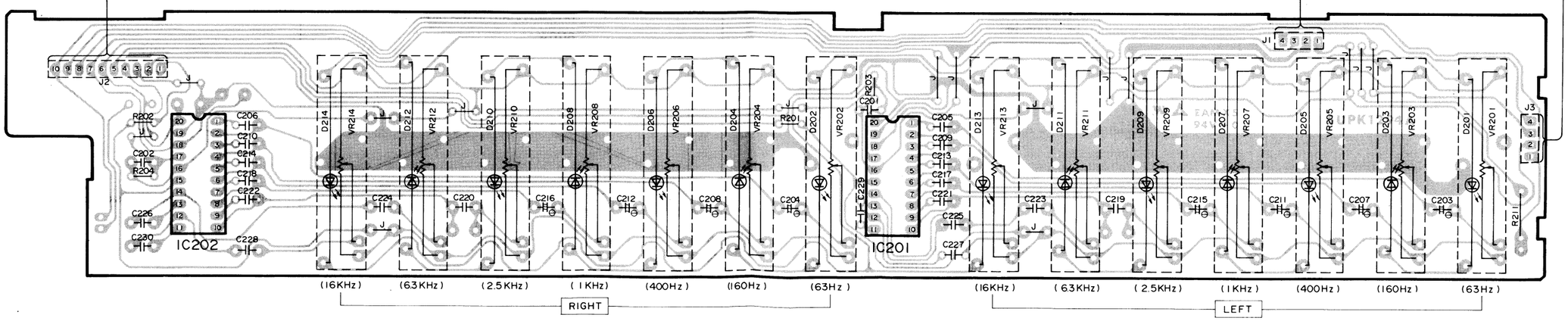
A IN/OUTPUT TERMINAL /BUFFER AMP P.C.B.



D POWER/ EQUALIZATION SWITCH P.C.B



C B.P. FILTER AMP/ BAND LEVEL CONTROLS P.C.B.



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

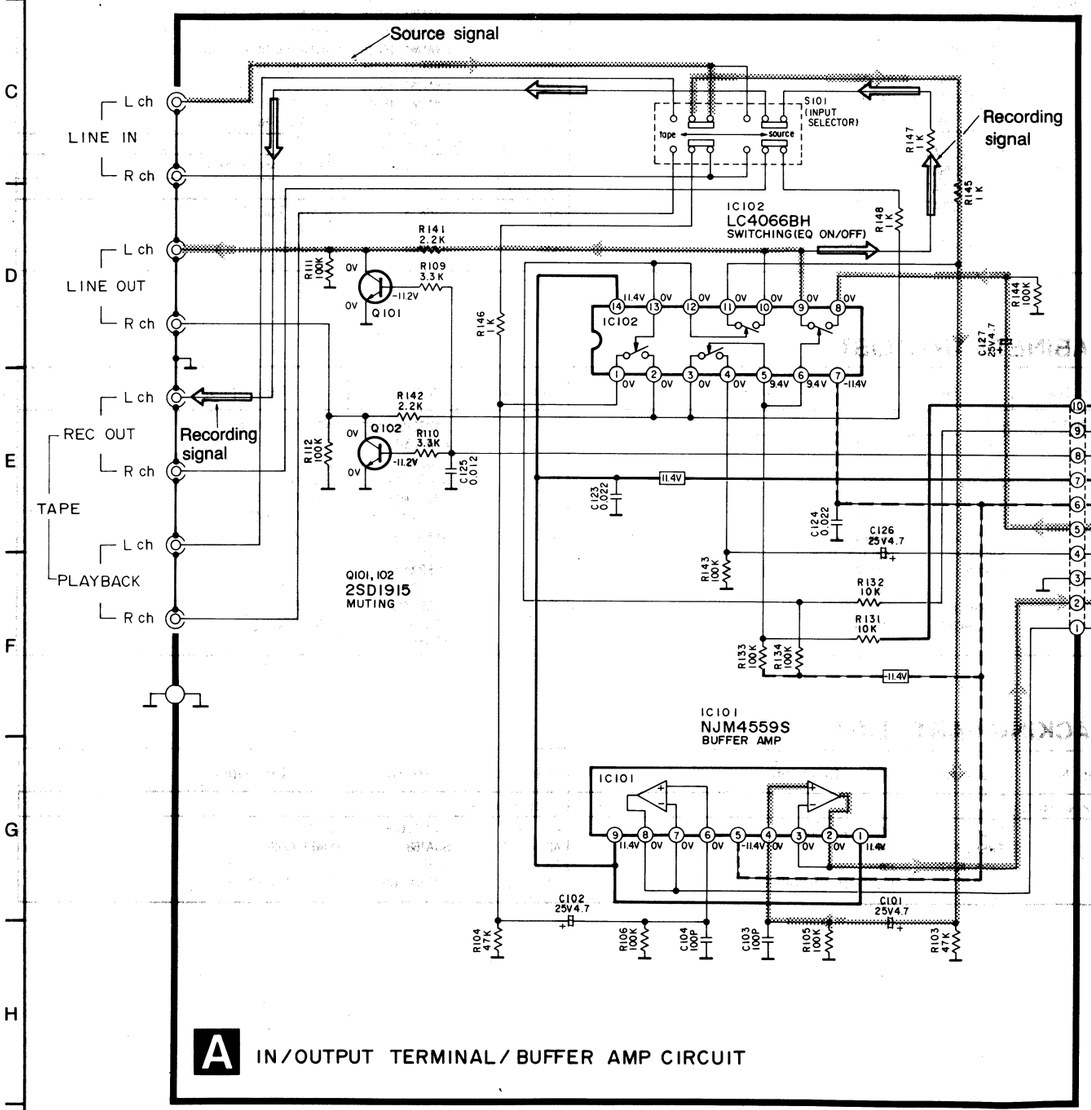
Notes:

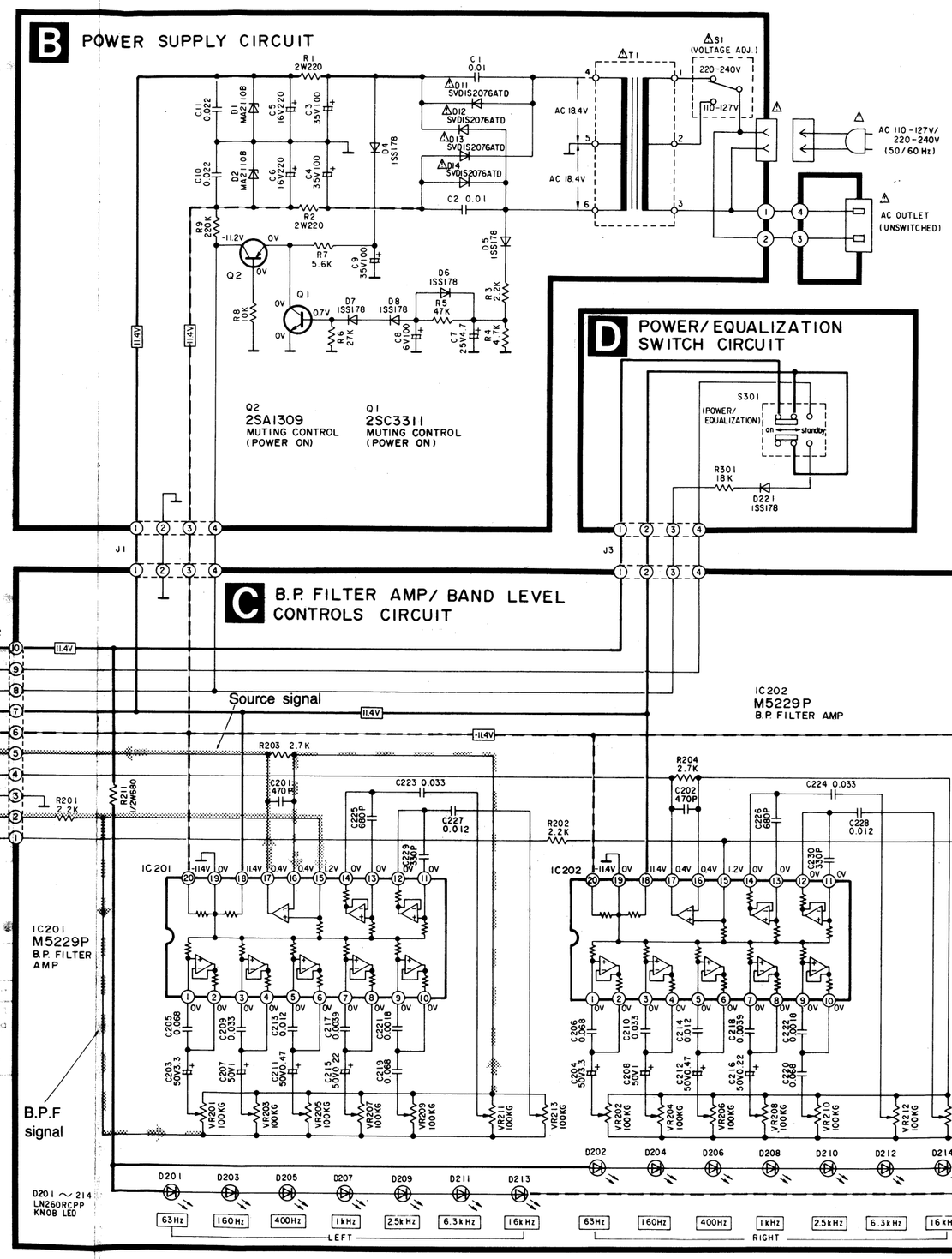
- **S1:** Voltage selector switch in **"220 V~240 V"** position. (110 V~127 V/220 V~240 V)
- **S101:** Input selector switch in **"source"** position.
- **S301:** Power/equalization switch in **"on"** position.

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

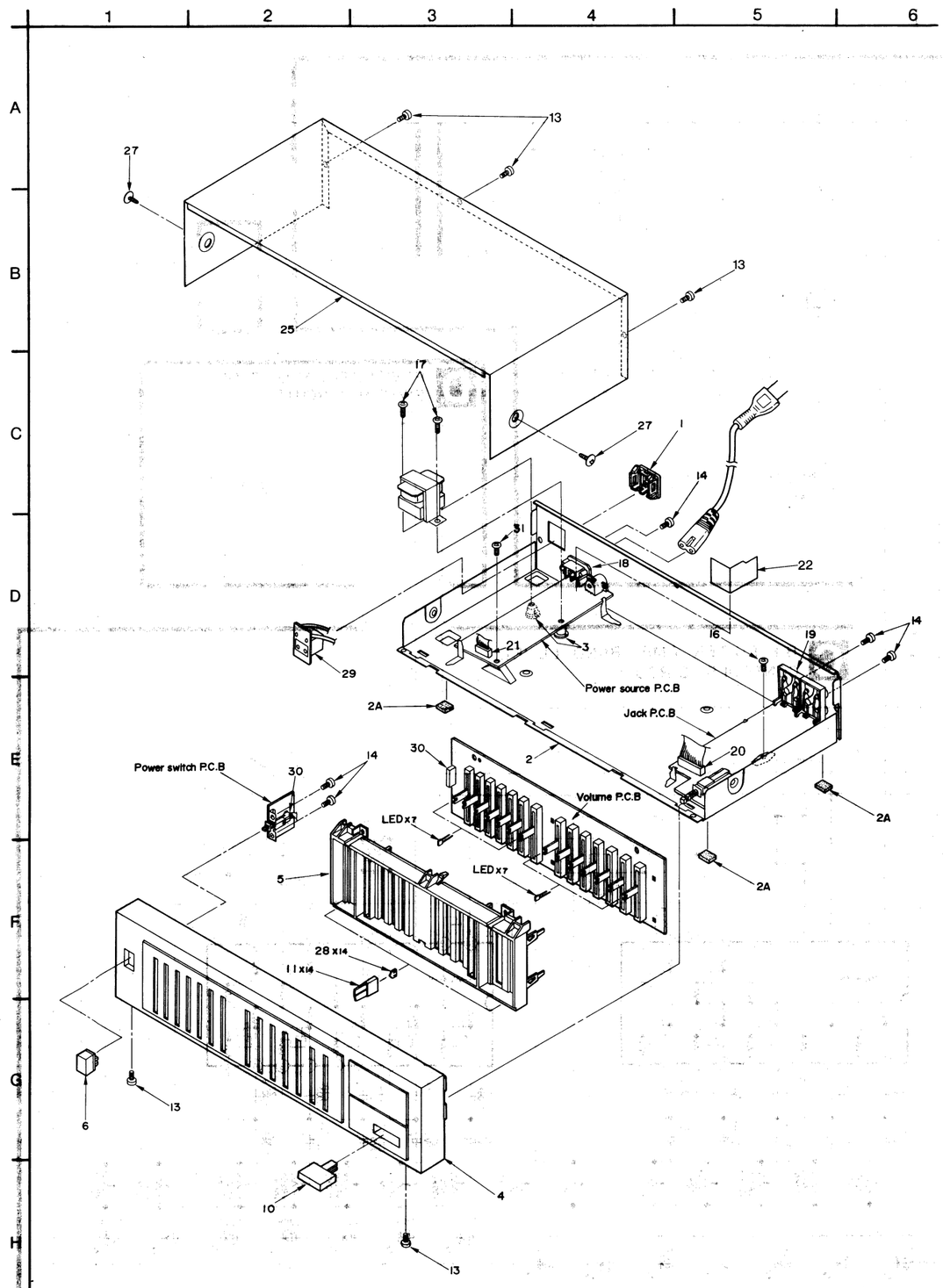
- Recording signal (Lch)
- Source signal (Lch)
- B.P.F signal
- Positive voltage lines.
- Negative voltage lines.

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.





■ EXPLODED VIEW



■ REPLACEMENT PARTS LIST

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

●ELECTRICAL PARTS LIST

Ref. No.		Part No.	Description
INTEGRATED CIRCUITS			
IC101		NJM4559S	I.C. BUFFER AMP
IC102		LC4066BH	I.C. EQ
IC201		M5229P	I.C. FILTER
IC202		M5229P	I.C. FILTER
TRANSISTORS			
Q1		2SC3311A-Q	TRANSISTOR
Q2		2SA1309R	TRANSISTOR
Q101		2SC1915-T	TRANSISTOR
Q102		2SC1915-T	TRANSISTOR
DIODES			
D1		MA2110BLF	DIODE
D2		MA2110BLF	DIODE
D4		1SS178TPA7	DIODE
D5		1SS178TPA7	DIODE
D6		1SS178TPA7	DIODE
D7		1SS178TPA7	DIODE
D8		1SS178TPA7	DIODE
D11	⚠	SVD1S2076AT	DIODE
D12	⚠	SVD1S2076AT	DIODE
D13	⚠	SVD1S2076AT	DIODE
D14	⚠	SVD1S2076AT	DIODE
D201		LN260RCPP	L.E.D ASS'Y
D202		LN260RCPP	L.E.D ASS'Y
D203		LN260RCPP	L.E.D ASS'Y
D204		LN260RCPP	L.E.D ASS'Y
D221		1SS178TPA7	DIODE
VARIABLE RESISTORS			
VR201		EWANW1J15G15	VARIABLE RESISTOR
VR202		EWANW1J15G15	VARIABLE RESISTOR
VR203		EWANW1J15G15	VARIABLE RESISTOR
VR204		EWANW1J15G15	VARIABLE RESISTOR
VR205		EWANW1J15G15	VARIABLE RESISTOR
VR206		EWANW1J15G15	VARIABLE RESISTOR
VR207		EWANW1J15G15	VARIABLE RESISTOR
VR208		EWANW1J15G15	VARIABLE RESISTOR
VR209		EWANW1J15G15	VARIABLE RESISTOR
VR210		EWANW1J15G15	VARIABLE RESISTOR
VR211		EWANW1J15G15	VARIABLE RESISTOR
VR212		EWANW1J15G15	VARIABLE RESISTOR
VR213		EWANW1J15G15	VARIABLE RESISTOR
VR214		EWANW1J15G15	VARIABLE RESISTOR
COILS AND TRANSFORMERS			
T1	⚠	SLTK513-W	POWER TRANSFORMER
SWITCHES			
S1	⚠	SSRK19	SW, VOLTAGE SELECTOR
S101		SSGK75	SW, INPUT SELECT
S301		SSHK88	SW, POWER

●CABINET PARTS LIST

Ref. No.		Part No.	Description
CABINET AND CHASSIS			
1		SJS9330A	AC OUTLET COVER
2		SGPKH8017-KX	REAR PANEL
2A		SKL293	FOOT
3		SHE187-K	SPACER
4		SGYKH8017-KP	PANEL
5		SGXK122	ORNAMENT
6		SBC666-5	BUTTON, POWER
10		SBC938	BUTTON, INPUT SELECTOR
11		SBWK27	KNOB, VR
13		XTB3+8JFZ	SCREW
14		XTB3+8GFZ	SCREW
16		XTBS3+8CFYR1	TAPPING SCREW
17		XTW3+20T	SCREW
18	⚠	SJS9236	AC INLET
19		SJF3057NA	TERMINAL
20		SJT31043-V	CONNECTOR(10P)
21		SJT30440LX-V	CONNECTOR(4P)
22		SMXK50-1	INSULATOR
25		SKCK200K99	CABINET BODY
27		SNE2095-5	SCREW
28		SBZK33	GUIDE, LIGHT
29	⚠	SJS9232B	AC OUTLET
30		SJS50471DS	CONNECTOR(4P)
31		XTB3+8J	SCREW

●PACKING PARTS LIST

Ref. No.		Part No.	Description
PACKING MATERIAL			
P1		SPGK411	PACKING CASE
P2		SPSK121	PAD
P3		SPSK122-1	PAD
P4		SPPK51	PROTECTION COVER
ACCESSORIES			
A1		SJPK2203-1	CORD
A2	⚠	SJA168	POWER CORD
A3		SQFK10221	INSTRUCTION BOOK
A4	⚠	RJP120ZBS-H	AC PLUG ADAPTOR

■ RESISTORS AND CAPACITORS

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Numbering System of Resistor

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1KΩ)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470Ω)

Numbering System of Capacitor

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001μF)	Tolerance	Peculiarity
ECEA	50	M	330	
Type	Voltage (50V)	Pecliarity	Value (33μF)	

- Capacity values are in microfarads (μF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
- Resistance values are in ohms (Ω), unless specified otherwise, 1K = 1,000Ω, 1M = 1,000kΩ

Resistor Type	Wattage		Tolerance
ERD : Carbon	10 : 1/8W	12 : 1/2W	J : ±5%
ERG : Metal Oxide	14 : 1/4W	25 : 1/4W	F : ±1%
ERQ : Fuse Type Metal	1A : 1W	18 : 1/8W	G : ±2%
ERX : Metal Film	S2 : 1/4W	S1 : 1/2W	J : ±5%
ERD L : Carbon (chip)	2F : 1/4W	50 : 1/2W	K : ±10%
ERO K : Metal Film (chip)	2A : 2W	3A : 3W	M : ±20%
ERC : Solid	6G : 1/10W	8G : 1/8W	
ERF : Incombustible Box-Shaped			
ERM : Wire-Wound			
RRJ : Cip Resistor			
ERJ : Cip Resistor			

Capacitor Type	Voltage		Tolerance
ECE : Electrolytic	0J : 6.3V	1A : 10V	K : ±10%
ECCD : Ceramic	1C : 16V	1E : 25V	M : ±20%
ECKD : Ceramic Capacitor	1H : 50V	1V : 35V	Z : +80 % −20
ECQM : Poyester	50 : 50V	05 : 50V	
ECQP : Polypropylene	2H : 500V	2A : 100V	J : ±5%
ECG : Ceramic	1 : 100V	1J : 63V	G : ±2%
ECEA N : Non Polar Electrolytic	KC : 400V AC		F : ±1%
QCU : Ceramic (Chip Type)	KC : 125V AC (UL)		C : ±0.25pF
ECUX : Ceramic (Chip Type)			D : ±0.5pF
ECF : Semiconductor			
EECW : Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)		
R1	ERG2ANJ221	220 2
R2	ERG2ANJ221	220 2
R3	ERDS2TJ222	2.2K 1/4
R4	ERDS2TJ472	4.7K 1/4
R5	ERDS2TJ473	47K 1/4
R6	ERDS2TJ273	27K 1/4
R7	ERDS2TJ562	5.6K 1/4
R8	ERDS2TJ103	10K 1/4
R9	ERDS2TJ224	220K 1/4
R103	ERDS2TJ473	47K 1/4
R104	ERDS2TJ473	47K 1/4
R105	ERDS2TJ104	100K 1/4
R106	ERDS2TJ104	100K 1/4
R109	ERDS2TJ332	3.3K 1/4
R110	ERDS2TJ332	3.3K 1/4
R111	ERDS2TJ104	100K 1/4
R112	ERDS2TJ104	100K 1/4
R131	ERDS2TJ103	10K 1/4
R132	ERDS2TJ103	10K 1/4
R133	ERDS2TJ104	100K 1/4
R134	ERDS2TJ104	100K 1/4
R141	ERDS2TJ222	2.2K 1/4
R142	ERDS2TJ222	2.2K 1/4
R143	ERDS2TJ104	100K 1/4
R144	ERDS2TJ104	100K 1/4
R145	ERD25TJ102	1K 1/4
R146	ERD25TJ102	1K 1/4
R147	ERD25TJ102	1K 1/4
R148	ERD25TJ102	1K 1/4
R201	ERDS2TJ222	2.2K 1/4
R202	ERDS2TJ222	2.2K 1/4
R203	ERDS2TJ272	2.7K 1/4
R204	ERDS2TJ272	2.7K 1/4
R211	ERDS1FJ681	680 1/2
R301	ERDS2TJ183	18K 1/4
CAPACITORS(VALUE,VOLTAGE)		
C1	ECKD1H103PF	0.01 50
C2	ECKD1H103PF	0.01 50
C3	ECEA1VU101	100 35
C4	ECEA1VU101	100 35
C5	ECEA1CU221	220 16
C6	ECEA1CU221	220 16
C7	ECEA1EK4R7	4.7 25
C8	ECEA0JU101	100 6.3
C9	ECEA1VU101	100 35
C10	ECKD1H223PF	0.022 50
C11	ECKD1H223PF	0.022 50
C101	ECEA1EK4R7	4.7 25
C102	ECEA1EK4R7	4.7 25
C103	ECCD1H101K	100P 50
C104	ECCD1H101K	100P 50
C123	ECKD1H223PF	0.022 50
C124	ECKD1H223PF	0.022 50
C125	ECFTD123KXL	0.012 25
C126	ECEA1EK4R7	4.7 25
C127	ECEA1EK4R7	4.7 25
C201	ECKD1H471KB	470P 50
C202	ECKD1H471KB	470P 50
C203	ECEA1HK3R3	3.3 50
C204	ECEA1HK3R3	3.3 50
C205	ECFTD683KXL	0.068 25
C206	ECFTD683KXL	0.068 25
C209	ECFTD333KXL	0.033 25
C210	ECFTD333KXL	0.033 25
C211	ECEA1HKR47	0.47 50
C212	ECEA1HKR47	0.47 50
C213	ECFTD123KXL	0.012 25
C214	ECFTD123KXL	0.012 25
C215	ECEA1HKR22	0.22 50
C216	ECEA1HKR22	0.22 50
C217	ECKD1H392KB	3900P 50
C218	ECKD1H392KB	3900P 50
C219	ECFTD683KXL	0.068 25
C220	ECFTD683KXL	0.068 25
C221	ECKD1H182KB	0.0018 50
C222	ECKD1H182KB	0.0018 50
C223	ECFTD333KXL	0.033 25
C224	ECFTD333KXL	0.033 25
C225	ECKD1H681K	680P 50
C226	ECKD1H681K	680P 50
C227	ECFTD123KXL	0.012 25
C228	ECFTD123KXL	0.012 25
C229	ECKD1H331KB	330P 50
C230	ECKD1H331KB	330P 50

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